CLAIMS

1.Use of inhibitors of h-Prune cyclic nucleotide phosphodiesterase activity for the preparation of a medicament for prevention and treatment of tumour metastases characterised by an overexpression of h-PRUNE, said inhibitors being selected from the group consisting of a peptide having the following amino acidic sequence NIIHGSDSVESAEKE (SEQ ID No 9); a peptide comprising the following amino acidic sequence NIIHGSDSVESAEKE GGGYGRKKRRQRRR (SEQ ID No 10); vinpocetine, IC261 and derivatives, structural analogues and isomers thereof.

2.Use according to claim 1, wherein tumours characterised by an overexpression of h-PRUNE are breast carcinoma, sarcoma, neuroblastoma, prostate tumour, pancreatic tumour, colon carcinoma tumour, rectal tumour, medulloblastoma, epitelioma, epatocarcinoma, cell T or cell B lymphomas, myeloma and melanoma, and pulmonary tumour.

3.Peptide comprising the following amino acidic sequence: NIIHGSDSVESAEKEGGGYGRKKRRQRRR (SEQ ID No 10) characterised in that it is permeable.

4.Peptide comprising the following amino acidic sequence: NIIHGSDSVESAEKE GGGYGRKKRRQRRR (SEQ ID No 10) and characterised in that it is permeable and it is an inhibitor of h-Prune cyclic nucleotide phosphodiesterase activity, for use in medical field.

5.Peptide having the following amino acidic sequence: NIIHGSDSVESAEKE (SEQ ID No 9).

6.Peptide having the following amino acidic sequence: NIIHGSDSVESAEKE (SEQ ID No 9) characterised in that it is an inhibitor of h-Prune cyclic nucleotide phosphodiesterase activity, for use in medical field.

7.Screening method for h-PRUNE-inhibiting compounds, comprising the following phases:

a) selection of at least a phosphoesterase (PDE) inhibiting compound or derivative, structural analogue or isomer thereof;

b) administration of said at least one compound at concentration between 0,05 μM and 10 μM in a cell line overexpressing h-PRUNE, wherein said cellular line is MDA-C100 435 prune #4;

c) quantitative analysis of the cyclic nucleotide phosphodiesterase activity of h-PRUNE and/or analysis of cellular motility versus concentration of said at least one compound and chemo-attractant and

selection of compound able to inhibit said phosphodiesterase activity between the values from 0.01 to 1 pmol/min^{-1}/ug^{-1} and/or inhibit said motility up to the attainment of the values between 200 and 1200 cells.

8.Screening method according to claim 7, wherein the quantitative analysis of step c) is carried out by hydrolysis tests of the c-AMP and/or c-GMP substrate.

9.Screening method according to claim 7, wherein the substrate is used at concentration between 0,008 μM and 1 μM.

10.Method for in vitro detection of h-PRUNE in a biological sample for metastases diagnosis of tumours characterised by an h-PRUNE overexpression by immunological assay, FISH analysis, Real-time PCR, in situ hybridization.

11.Method for in vitro detection of h-PRUNE according to claim 10, comprising the following steps:

a) bring into contact said biological sample with at least one anti-h-PRUNE monoclonal antibody;

b) detection of the antigen-antibody complex;

c) quantitative analysis of the antigen-antibody complex.

12.Method according to claim 11, wherein said biological sample is a tissue section or biological fluid.

13.Method according to any one of claims from 10 to 12, wherein said anti-h-PRUNE antibody is the monoclonal antibody able to recognise and bind selectively the h-PRUNE recombinant protein, characterised in that it belongs to the IgM immunoglobulin class and is produced by 4G3/4 clone (deposited at the CBA in Genoa on 10/12/2004)

14.Method according to any one of claims from 10 to 13, wherein said anti-h-PRUNE antibody is labelled with a radioisotope, fluorescent molecule or enzyme.

15.Method for in vitro detection of h-PRUNE according to claim 11, wherein said detection and quantitative analysis of the antigen-antibody complex are performed by immunohistochemistry, immunoprecipitation, immunofluorescence, ELISA, immunoblotting analyses.

16.Method according to claim 10, wherein PCR Real time primers specific for h-PRUNE comprise the sequences:

5'-AGAGATCTTGGACAGGCAAACT-3' (SEQ ID No 1);

3'-CCATGTTGACACAGTCCAGGAT-5' (SEQ ID No 2);

or their complementary sequences.

17.Method according to claim 10, wherein the labelled probe for Real-time PCR or in situ hybridization comprise the oligonucleotidic sequence: CTGCATGGAACCATC (SEQ ID No 3) or its complementary sequence or the sequence wherein T is replaced by U.

18.Method according to claim 17, wherein said labelled probe for Real-time PCR is linear or circular one.

19.Method according to any one of claims 17 and 18, wherein said probe is labelled with at least one radioisotope and/or fluorochrome.

20.Method according to any one of claims from 17 to 19, wherein said probe is labelled with at least a fluorochrome at 5' and/or 3'.

21.Method according to any one of claims from 17 to 20, wherein said fluorochrome is 6-carboxifluorescein.

22.Diagnostic kit for the detection of h-PRUNE in a biological sample for metastases diagnosis of tumours characterised by an h-PRUNE overexpression comprising at least one anti-h-PRUNE monoclonal antibody, or a pair of primers specific for h-PRUNE or labelled oligonucleotidic probe specific for h-PRUNE.

23.Diagnostic kit according to claim 22, wherein the tumours characterised by an h-PRUNE overexpression are breast carcinoma, sarcoma, neuroblastoma, melanoma.

24.Diagnostic kit according to any one of claims 22 and 23, wherein said anti-h-PRUNE antibody is characterised in that it belongs to the IgM immunoglobulin class and is produced by 4G3/4 clone (deposited at the CBA in Genoa on 10/12/2004).

25.Diagnostic kit according to claim 24, wherein said anti-h-PRUNE monoclonal antibody is labelled with a radioisotope, fluorescent molecule or enzyme.

26.Diagnostic kit according to claim 22, wherein said pair of primers specific for h-PRUNE comprises the sequences:

5'-AGAGATCTTGGACAGGCAAACT-3' (SEQ ID No 1);

3'-CCATGTTGACACAGTCCAGGAT-5' (SEQ ID No 2);

or their complementary sequences.

27.Diagnostic kit according to claim 22, wherein said labelled oligonucleotidic probe for Real-time PCR or in situ hybridization comprises the oligonucleotidic sequence:

CTGCATGGAACCATC (SEQ ID No 3)

or its complementary sequence or the sequence wherein T is replaced by U.

28. Diagnostic kit according to claim 27, wherein said labelled oligonucleotidic probe for Real-time PCR is linear or circular one.

29. Diagnostic kit according to any one of claims 27 and 28, wherein said oligonucleotidic probe is labelled with at least one radioisotope and/or fluorochrome.

30. Diagnostic kit according to any one of claims from 27 to 29, wherein said probe is labelled with at least one fluorochrome at 5' and/or 3'.

31. Diagnostic kit according to claim 30, wherein the fluorochrome is 6-carboxifluorescein.

32. Monoclonal murine antibody able to recognise and bind selectively the h-PRUNE recombinant protein, characterised in that it belongs to the IgM immunoglobulin class and is produced by 4G3/4 clone (deposited at the CBA in Genoa on 10/12/2004).